U.S. AIR FORCE

Expeditionary Medical Support

EMEDS and Deployment Medicine

Lt Col Nancy Kersh
IMA to Surgeon General Chair to Air University

U.S. AIR FORCE

Expeditionary Medical Support

“EMEDS: Our ticket on the first plane into the future”

Lt Gen P. K. Carlton, Jr.

U.S. AIR FORCE

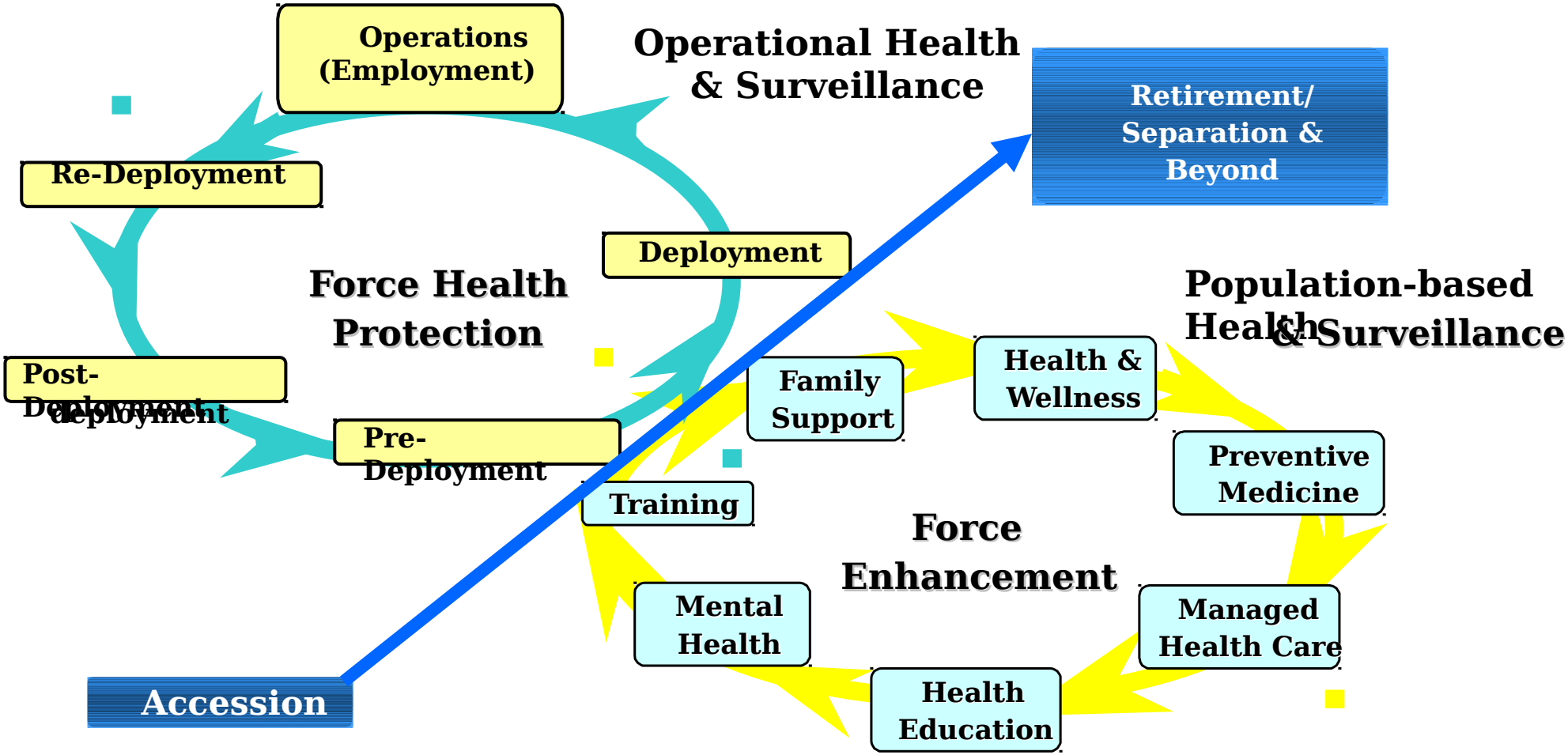
Force Health Protection -- Goal

- **A unified Strategy that protects services members from all health and environmental hazards associated with military service.**

Rear Admiral Michael L. Cowan, Director for Medical Readines
The Joint Staff

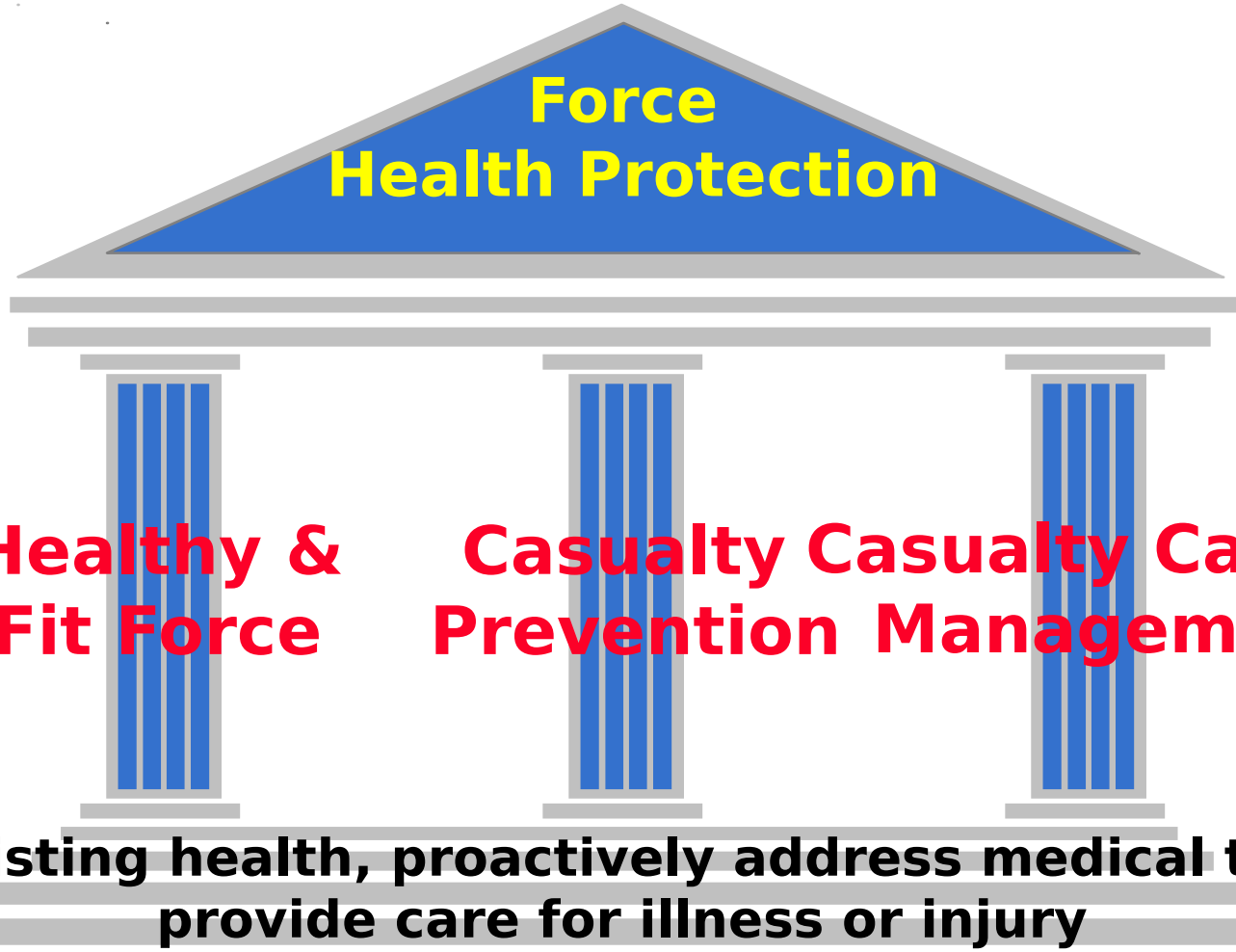
U.S. AIR FORCE

Force Health Protection



U.S. AIR FORCE

Force Health Protection



Improve existing health, proactively address medical threats and provide care for illness or injury

U.S. AIR FORCE

Casualty Care and Management EMEDS

First Responders

Forward Surgery

Theater Hospital

Definitive Care

Casevac

Medivac / Tactical A/E

Strategic A/E

Essential Care Capability

Continual Enroute Care

U.S. AIR FORCE

Expeditionary Medical Support for the Expeditionary Air Force

SPEARR

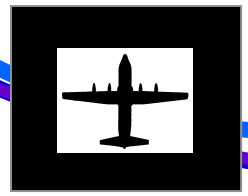
Small Portable Expeditionary Aeromedical Rapid Response

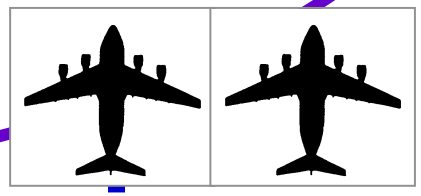
EMEDS

Expeditionary Medical Support

10 Beds

25 Beds





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Prevention and Aerospace Medicine Team (PAM)

- Designed to prevent disease/non-battle injuries
- Missions/Tasks
  - Health threat/risk assessment
  - Health hazard surveillance, control, and mitigation of effects
  - Primary/emergency care, flight medicine
  - Population at risk; 2-10,000
- 9 personnel in 3 modules
  - Module 1 (Advon) - Aerospace medicine physician, public health officer
  - Module 2 - Bioenvironmental engineer (BEE), independent duty medical technician
  - Module 3- 2 public health technicians, 2 BEE technicians, aerospace physiologist

U.S. AIR FORCE

Mobile Field Surgical Team (MFST)

- Rapidly deployable, easily transportable, small surgical team
- Lifesaving trauma care within one hour of injury
- Personnel: 1-General Surgeon, 1-Orthopedic Surgeon, 1-Emergency Physician, 1-Anesthesiologist, 1-OR Nurse/Tech

- Equipment: Man-portable 300 lbs of medical equipment and supplies in 5 backpacks, 60 lb generator, 1 folding litter
- Capability: Care for up to 20 patients in 48 hrs; perform up to 10 life or limb saving/stabilization procedures
- Operating conditions: Intended for specialized surgery tasks as stand alone for short periods or as medical augmentation unit; transportable by any means; uses shelter of opportunity; no patient

U.S. AIR FORCE

Expeditionary Critical Care Team (ECCT)

- **Ground based Critical Care Team**
- **Personnel – 1 Cardiopulmonary Lab Technician, 1 Internist and 1 Critical Care Nurse**
- **Equipment – 3 backpacks, 8 med bags**
- **Deploys within 24 hrs of MFST**
- **Provides personnel for forward stabilization and preparation for aeromedical evacuation. Operational within 24 hrs of arrival.**
- **As part of EMEDS Basic – Provides holding beds capable of stabilizing/maintaining 3 crit pts for 12 hrs; 4 min/intermediate pts for 24 hrs. Requires A/E, CCATT support**

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Small Portable Expeditionary Aeromedical Rapid Response (SPEARR) Team

- **Part of EMEDS Basic package or stand alone**
- **3 Modular Packages – SPEARR team stand alone**
  - **PAM**
  - **MFST**
  - **ECCT**
- **SPEARR Trailer**
  - **Bare base**
  - **No Host Nation Support**
- **A/E, CCATT support**
  - **Concurrent buildup**

U.S. AIR FORCE

SPEARR Trailer

- **Deployable within 2 hours**
- **Flexible -- Highly Mobile (one pallet)**
  - **Sling Loadable -- not tied to a forklift**
- **Relatively Broad Scope of Care**
  - **Initial Disaster Medical Assessment**
  - **Emergency/Flight/Primary Medicine**
  - **Emergency Surgery (General/Orthopedic)**
  - **Critical Care/Transport Preparation**

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Critical Care Air Transport Team (CCATT)

- For Aeromedical Evacuation Patients
- Capability: Provides in-flight critical care transport of 3 ICU patients; with 2nd critical care nurse, 5 stabilized pat
- Personnel: 3 - 1 Physician, 1 Nurse
  1 Respiratory Tech
- Equipment: Light weight, compact advanced and sophisticated patient management equipment and supplies
- Operating Conditions: Work with 5 member AE crews to care for stabilized casualties; for tactical and strategic evacuation

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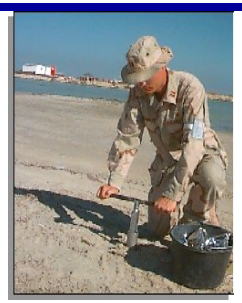
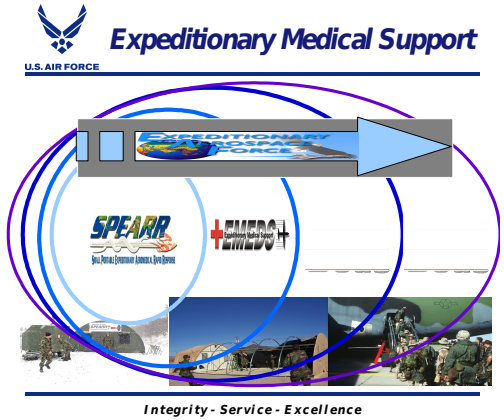
EMEDS Components



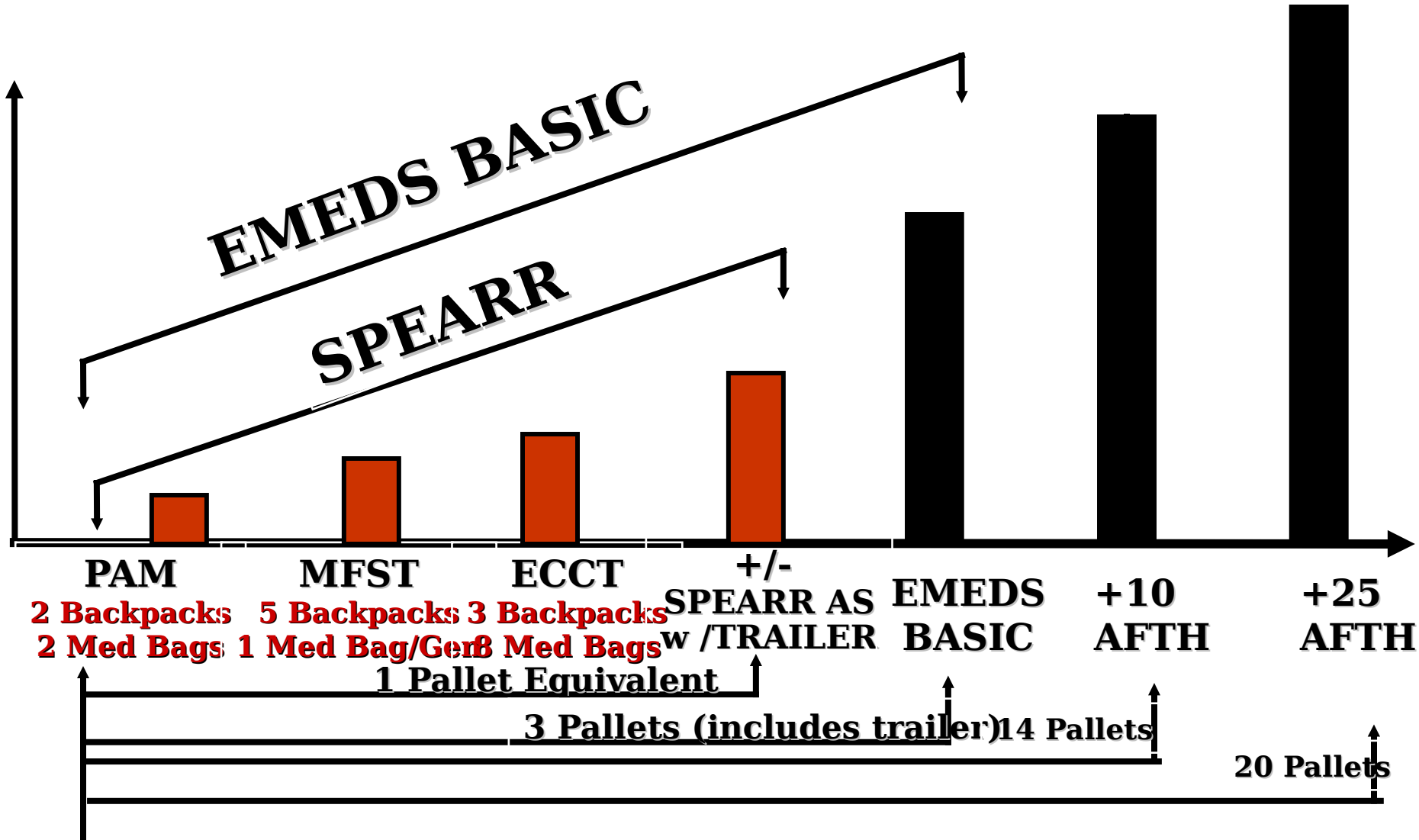
- PAM
- M-FST
- CCATT/ECCT
- EMEDS Basic, +10, +25
- BAT, CAT, RAT,
- Subspecialty Teams
- Coupled with Modular, Critical Care Capable A/E



U.S. AIR FORCE

EMEDS

Air Force Theater Hospital (AFTH)



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SPEARR/EMEDS/AFTH Capability

Time Phased Patient Responsiveness

- •Robust Primary Care
- •Disaster Response
- •Preventio n
- •Primary Care
- •Acute
- •Core Infrastruc- ture for Specialty Sets

Add Specialty Sets

	SPEARR	EMEDS	+10	+25
PERSONNEL	10	25	56	87
PALLETS	1 (Trailer)	3	14*	20*
BEDS	3**	4**	10	25
PAR	500	500-2000	2000-3000	3000-5000
MAJOR TRAUMA SURGERIES	10 or 20 in 48 hrs	10 or 20 in 48 hrs	10 or 20 in 48 hrs	20 or 40 in 48 hrs
NON-OPERATIVE RESUSCITATIONS				

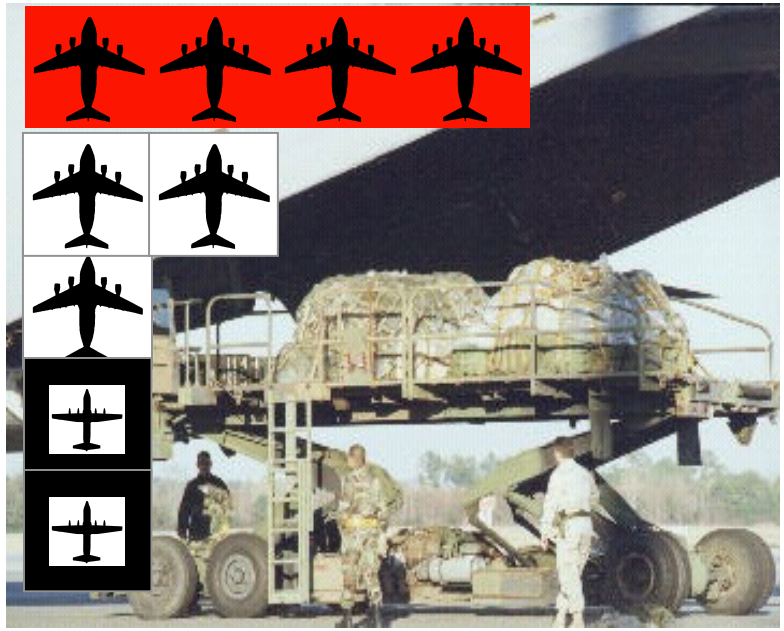
U.S. AIR FORCE

Advantage of EMEDS -- Less Lift Required

Expeditionary Medical Support EMEDS

- Old System - ATH
  - Covers needs in some overseas locations
- Continental US is the “new battlespace”
  - Coverage is in planning stages
- EMEDS design provides rapid response w/ less airlift

	Pallets	Airlift
25-Bed ATH C-17s	**55** ***(11 C-130’s)***	**4 +**
EMEDS +25 17s	**20** ***(4 C-130’s)***	**2 C-**
EMEDS +10 17	**14** ***(3 C-130’s)***	**1 C-**
EMEDS Basic 130	**3**	**1 C-**
SPEARR (full) 130	**1**	**1 C-**
SPEARR (packs) Only	**0**	**Pax**



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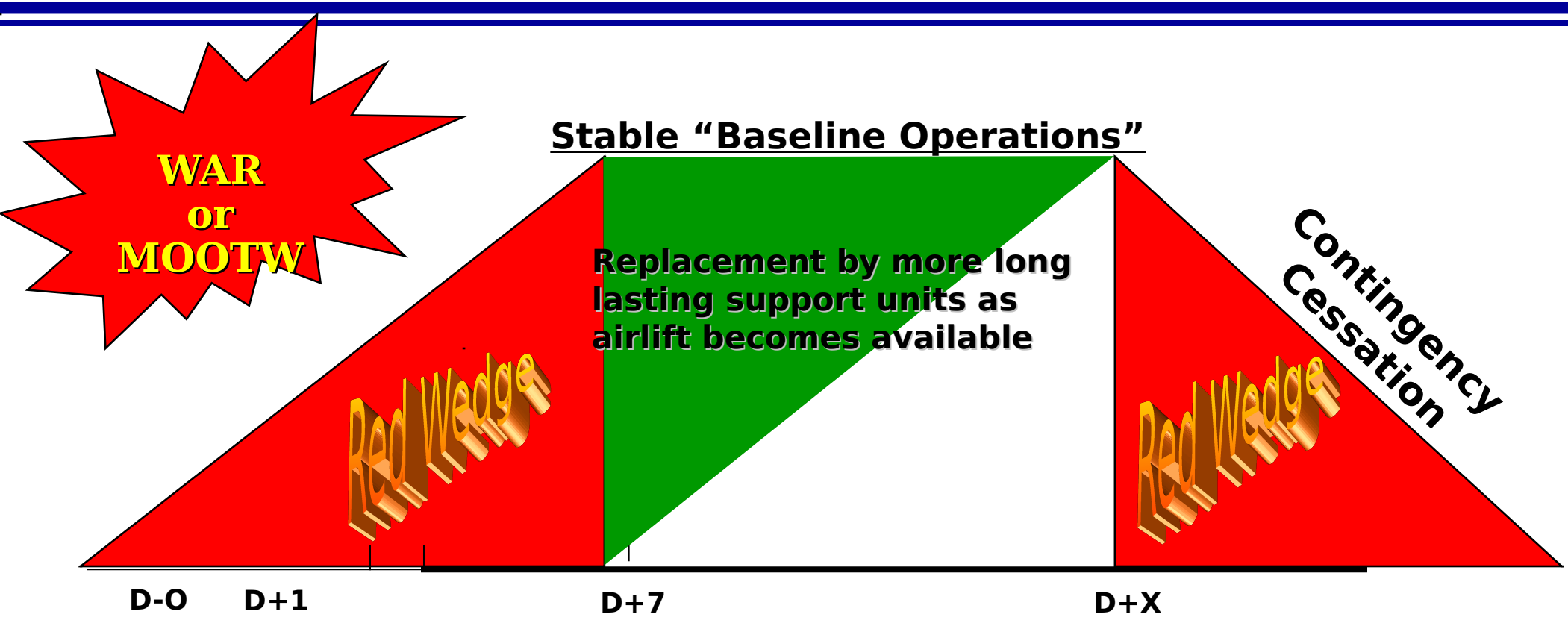
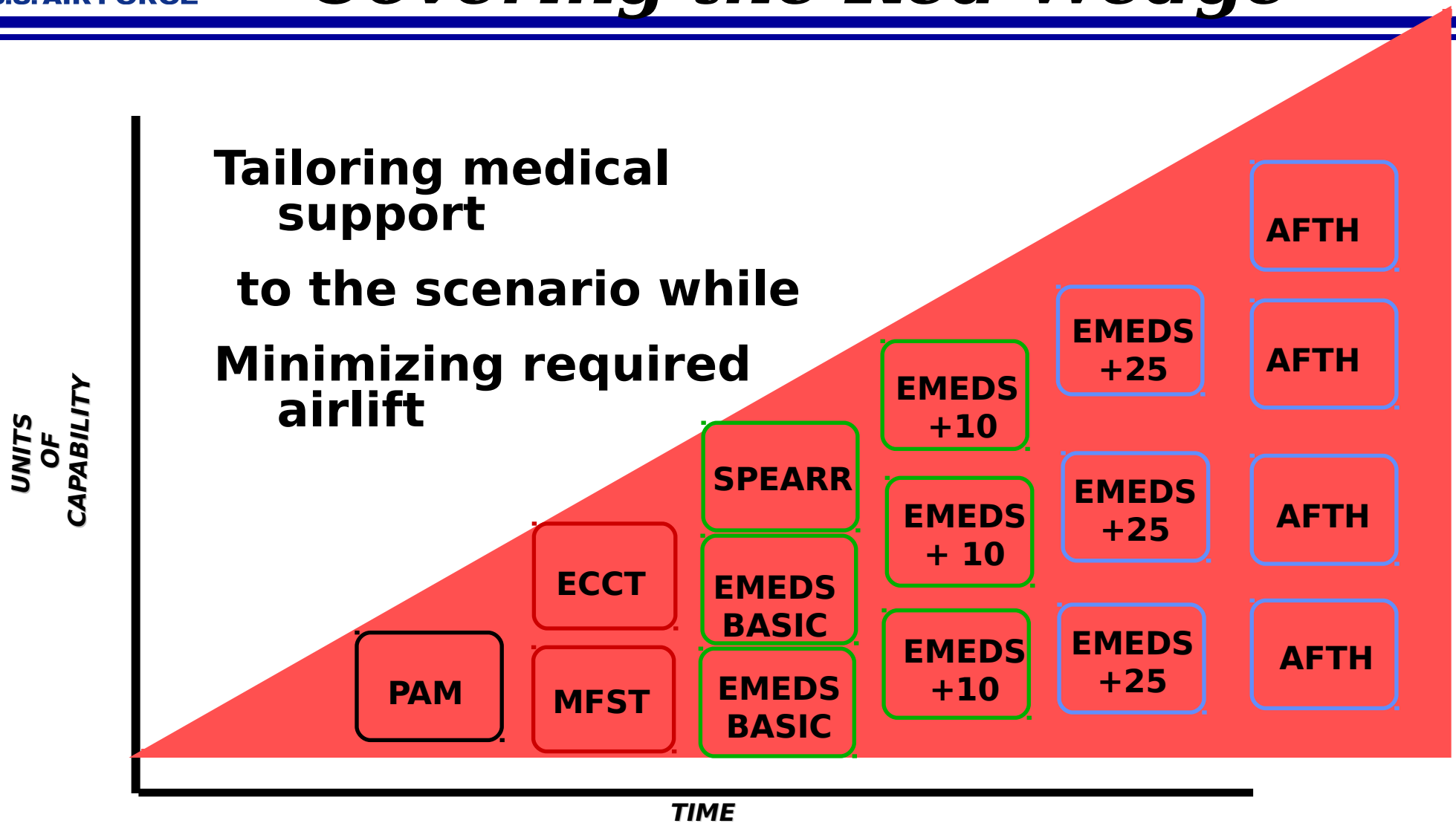
The Red Wedge Concept



- Wedge begins with an immediate need for medical care or a "surge" – temporary chaos is typical
- Goal is to move medical assets in to achieve a stable baseline

U.S. AIR FORCE

The Building Block Concept Covering the Red Wedge



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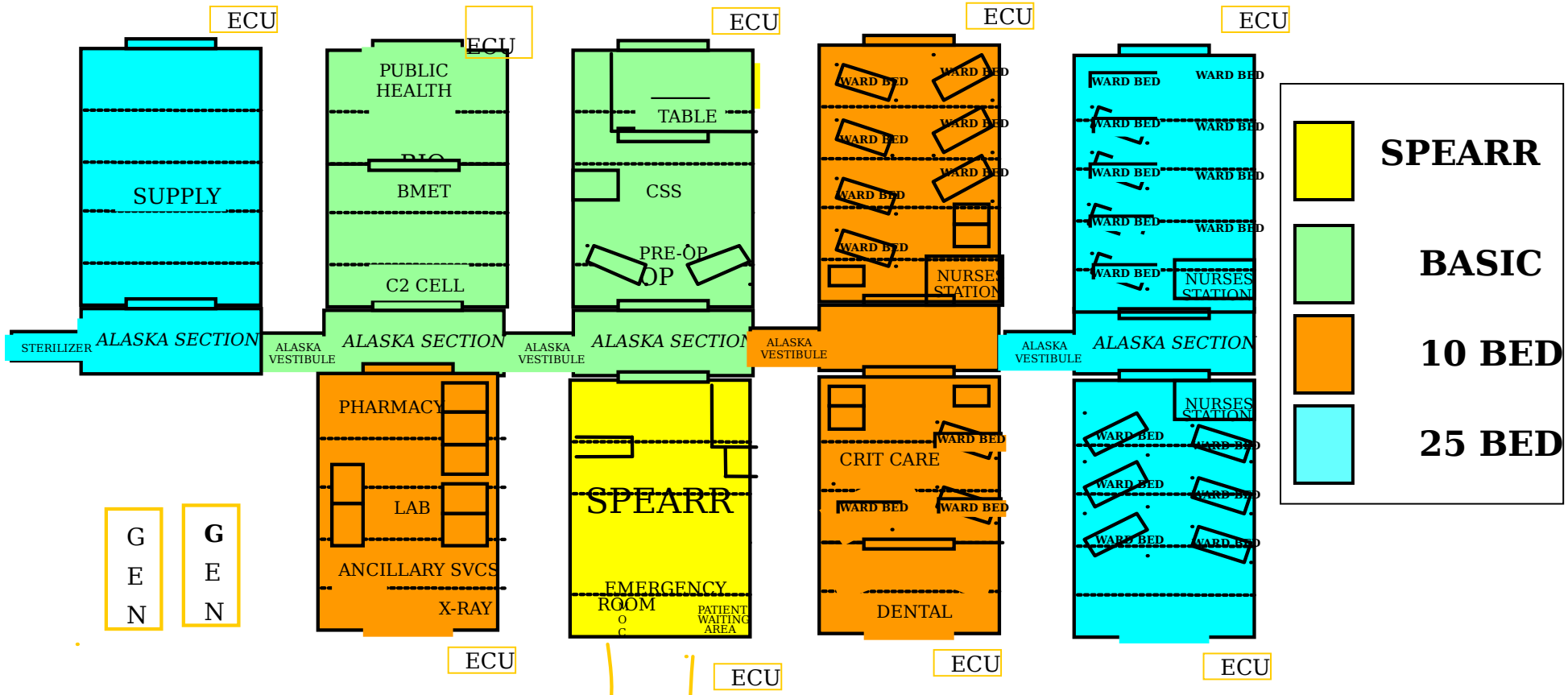
SPEARR/EMEDS/AFTH
Modular Approach



Medical Rapid Reaction Force

U.S. AIR FORCE

Deployments Overseas

EXPEDITIONARY AEROSPACE FORCE

SPEARR

SMALL PORTABLE EXPEDITIONARY AEROMEDICAL RAPID RESPONSE

EMEDS

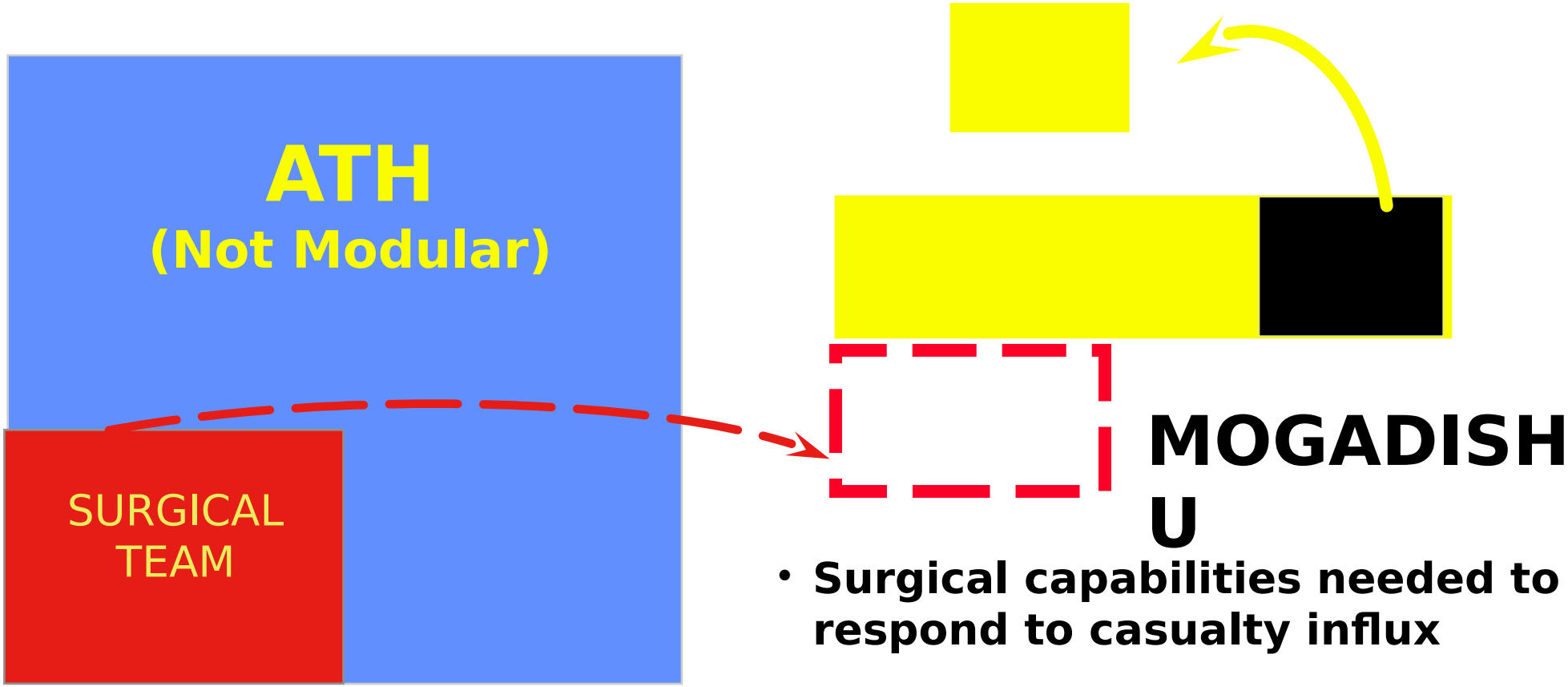
Expeditionary Medical Support

10 Beds

25 Beds

U.S. AIR FORCE

Mogadishu, Somalia (Oct 93)



- **Surgical capabilities needed to respond to casualty influx**
- **Forward strength reduced due to patient evacuation**
- **No capability for timely reinforcement**

U.S. AIR FORCE

Casualty Surge

CONUS/ Other

Strategic Evacuation/ Other Missions

"Flow Through" Regional Medical Center

Tactical Evacuation

AOR

Air Evac

CCATT

M-FST

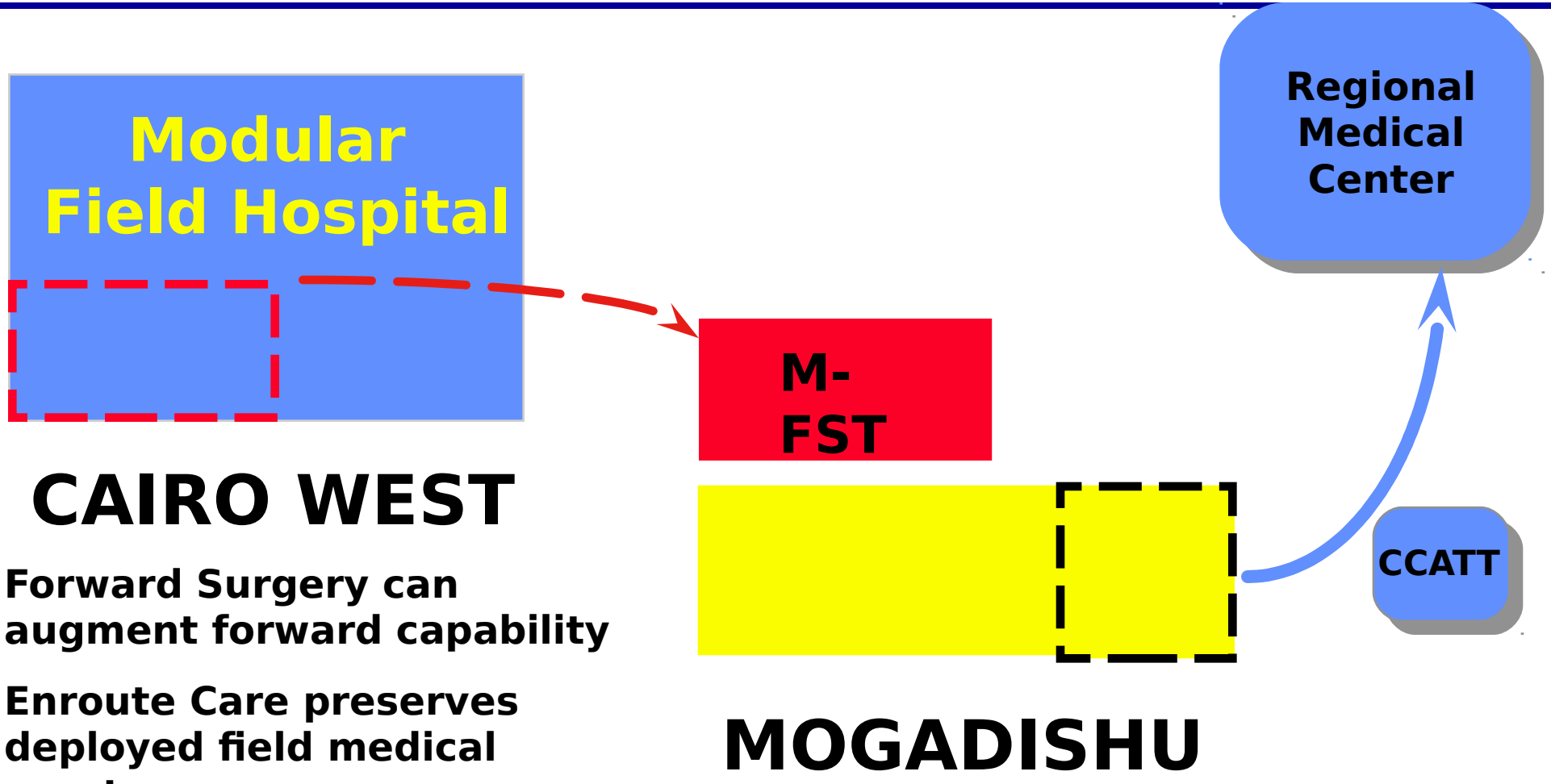
AFTH

SURGE

MISSION

With Enroute Care / Forward Surgery Support

The Advantage of Modularity



- Forward Surgery can augment forward capability
- Enroute Care preserves deployed field medical assets

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Operation Enduring Freedom (Nov 01)

Injury Scenario: Military and Civilian Care Comparison

	Elapsed Time Post Injury	Care Received	Military Setting	Civilian Setting
1	25 min	Emergency Surgery Damage Control	MFST personnel	Level I Trauma Center
2	6* hours	Emergency Surgery Further stabilization	CCATT enroute / Surgical Team at AmSurg Center	Level I Trauma Center
3	24* hours	Definitive Surgical Care	CCATT enroute / Surgical Team in Military Hospital Setting	Level I Trauma Center
4	48*+ hours	Definitive Surgical Care	Stateside Military Medical Center	Level I Trauma Center / Tertiary Hospital

* Times & locations are **estimated**

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OEF Apache Crash - 10 Apr 02

U.S. AIR FORCE

Apache Crash on 10 Apr 02

- **Patient #1 (Back Seater) - Severe facial injuries, (Le Fort III and open mandibular fx) compression fx T-12, burst fx of L1-2, posterior elements unstable, suspected cord injury, mild sub arachnoid hemorrhage**
- **Intubation to protect airway, 2 units PRBCs, 3 L crystalloid at MFST, CCATT continued to stabilize and monitor in flight**
- **Taken to German Hospital for spinal stabilization**
- **Neurologically intact**

U.S. AIR FORCE

Apache Crash on 10 Apr 02

- **Patient #2 - (Front Seater) bilat tibia fx, hypotension, severe facial injuries to include possible maxillary fx, L 3-4 fx with retroposition, 50% spinal canal compromise, motor deficit below injury, bilat Tibia fx (rt fx open)**
- **Intubation to protect airway, DPL neg, hypotension resolved after intubation, 2 units PRBC and 3 L of Crystalloid, rt tibia fx external fixation, other leg in bivalved cast**
- **Taken to German Hospital for spinal stabilization**
- **Neurologically intact with minimal lower extremity motor problems**

OEF Apache Crash - 10 Apr 02

U.S. AIR FORCE

Injury Scenario: Military and Civilian Care Comparison

	Elapsed Time Post Injury	Care Received Rescue	Military Setting	Civilian Setting
1	50 minutes		ParaRescue	EMT-P
2	1.9 hours	Intubation/ Fracture Stb / Blood / Volume Stabilization / Expansion ICU Care	Army Forward Surgical Team	Level I Trauma Center
3	6.9 - 8.1 hours	in Air on C-130 ICU Care in Air	CCATT/ AE enroute	Level I Trauma Center
4	8.1 - 9.2 hours (transload to C-17) 9.2 - 16.5 hrs	Arrival in Germany	CCATT / AE enroute	Level I Trauma Center

* Times & locations are **estimated**

U.S. AIR FORCE

Timelines on AE

- **1304Z - Apache Crash**
- **1355Z - MH-60 with PJs on scene**
- **1500Z - Arrival Forward Surgical Team**
- **1902Z - C-130 with CCATT / AE departs air base**
- **2000Z - C-130 arrives FST**
- **2110Z - C-130 returns to air base**
- **2110 - 2215Z - Transload to C-17**
- **2215 - 0535Z - C-17 flight to Germany**
- **Total Time - Crash to arrival in Germany - 16.5 hrs**

Now that is how we do AE : RAPID, RESPONSIVE, FLEXIBLE!

Operation Iraqi Freedom (OIF)

U.S. AIR FORCE

- **24 EMEDS facilities in 12 countries**
  - **214 beds in support of 65,000 warfighters**
- **5 CP-EMEDS in high threat (chem-bio) areas**
- **Deployed 1,822 medics from 58 AFSCs**
  - **Support of Air Force and Special Operations missions**
  - **Handled 640 combat casualties**
- **Lowest DNBI rate in military history (20% < DS/DS)**
- **Air Evac moved 2,000 patients on 200 missions in first 35 days**
  - **No patient deaths -- most successful Air Evac in history**

- USAF Aim Points, 29 Apr 03

Operation Iraqi Freedom: 380th AEW

- **EMEDS basic dental support package**
- **One dentist**
- **Forward deployed**
- **Services 500-1500 PAR**
- **Minor dental treatment**
  - **Fillings, wisdom teeth, root canals, cyst removals**
- **No dental chair**
- **No dental x-ray unit**

SG Newswire May 2003

U.S. AIR FORCE

OEF/OIF Average Deployment Days (6 Oct 03)

AFSC	Active	Guard	Reserve
41A (MSC)	78	95	95
43E (BEE)	76	36	105
45A (Anes)	90	89	71
45B (Orth)	88	0	179
45S (Surg)	91	15	179
46N (MS)	94	35	111
47G (Dent)	73	33	15

Lessons Learned from OEF & OIF

U.S. AIR FORCE

- **Combat pack your equipment**
  - **Inventory EMEDS equipment**
  - **Clean/sterilize surgical equipment**
  - **Re-Pack based on function**
  - **Especially if the team is new!**
- **Always aim to get smaller and lighter**
- **Always look for ways to modularize further**

U.S. AIR FORCE

Homeland Security and Civil Support?
The Military Will be Involved

EXPEDITIONARY AEROSPACE FORCE

SPEARR
SMALL PORTABLE EXPEDITIONARY AEROMEDICAL RAPID RESPONSE

EMEDS
Expeditionary Medical Support

10 Beds

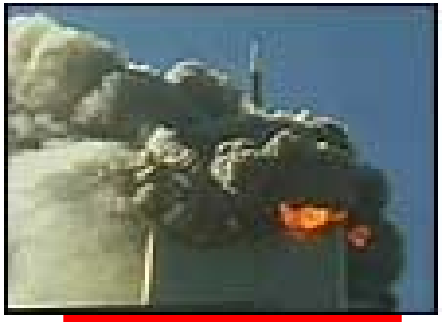
25 Beds

U.S. AIR FORCE

The Red Wedge Concept-- Increasing Medical Capability

Rapid responding medical assets are required if local system is overwhelmed

Surge in Medical Need



Disaster Occurs!

Federal & Others

State

Local

Additional "partners" bring assets to assist

Local EMS / Hospitals begin to feel strain

D-O

D+1

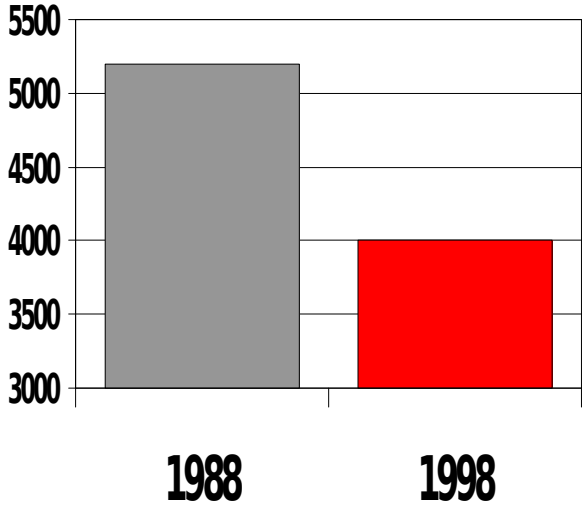
D+X

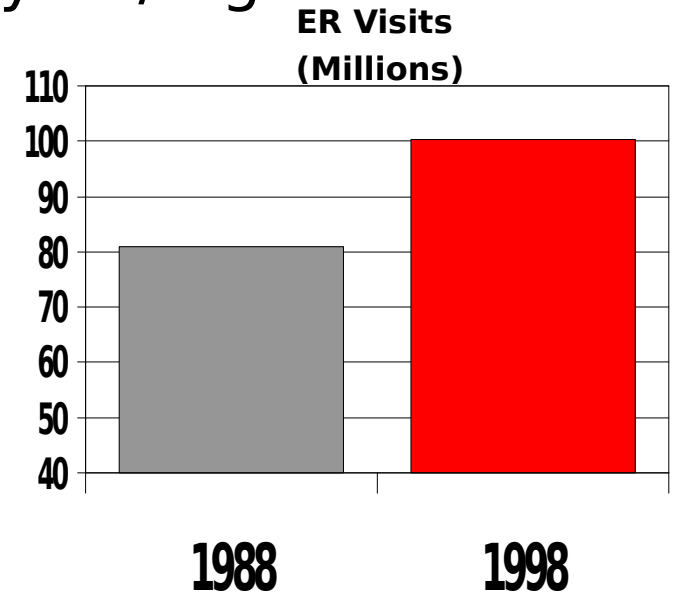
Medical Baseline

U.S. AIR FORCE

Effects of Managed Care
No Surge Capability to Counter Threats

- Average annual patient volume up from 15.K to 24.8 – more than 50%
- Under US federal law, only 24/7 guarantee is the ER



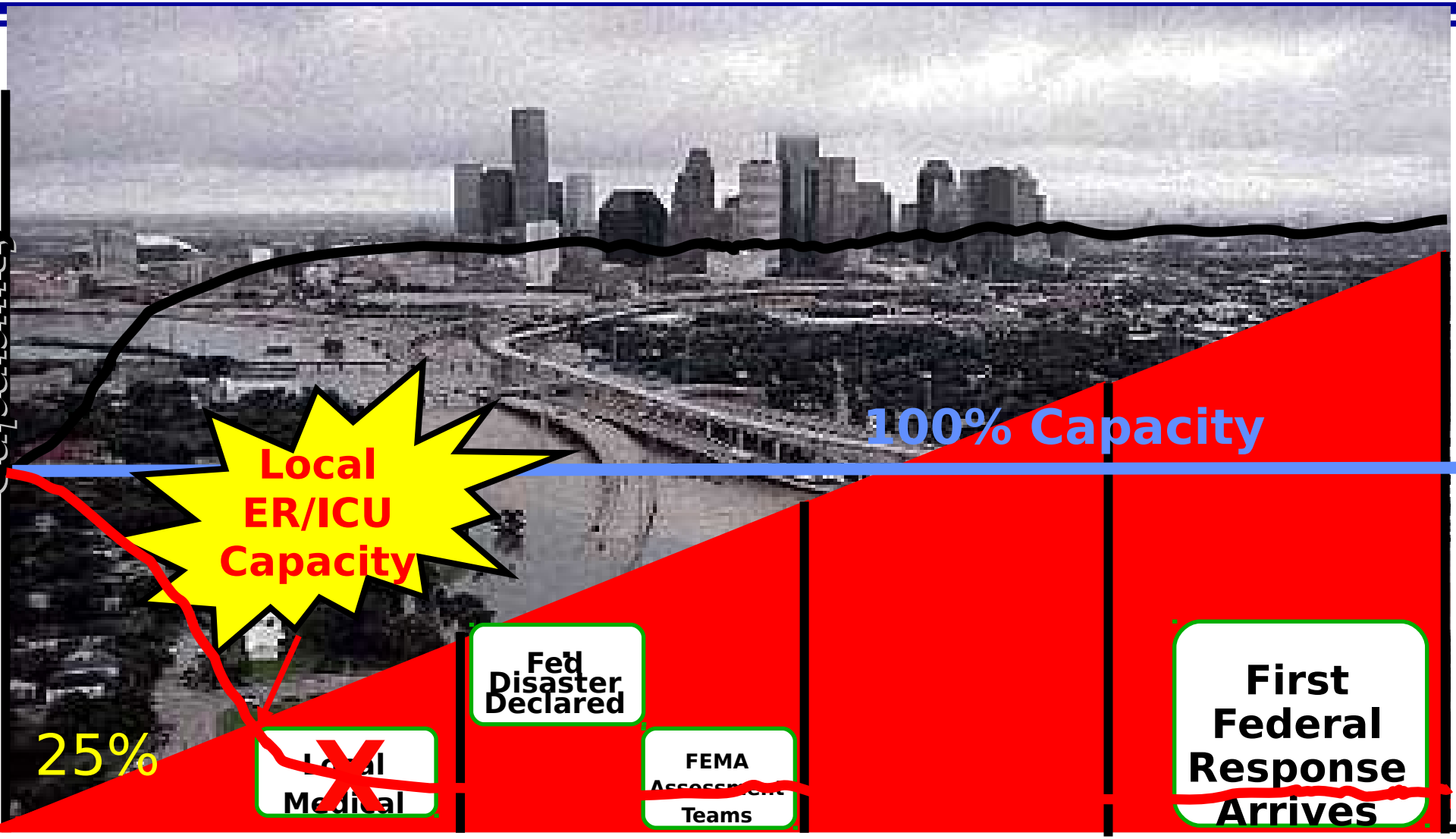


- **No surge capability in US health care/public health systems exists**
- **Disaster/BW-attack [Threats] could threaten national security interests**
- **Organizational structures/capabilities not well suited for BW attack**
- **Dealing with the media will be an immediate challenge for all levels**

U.S. AIR FORCE

Houston Flood Timeline

June 2001



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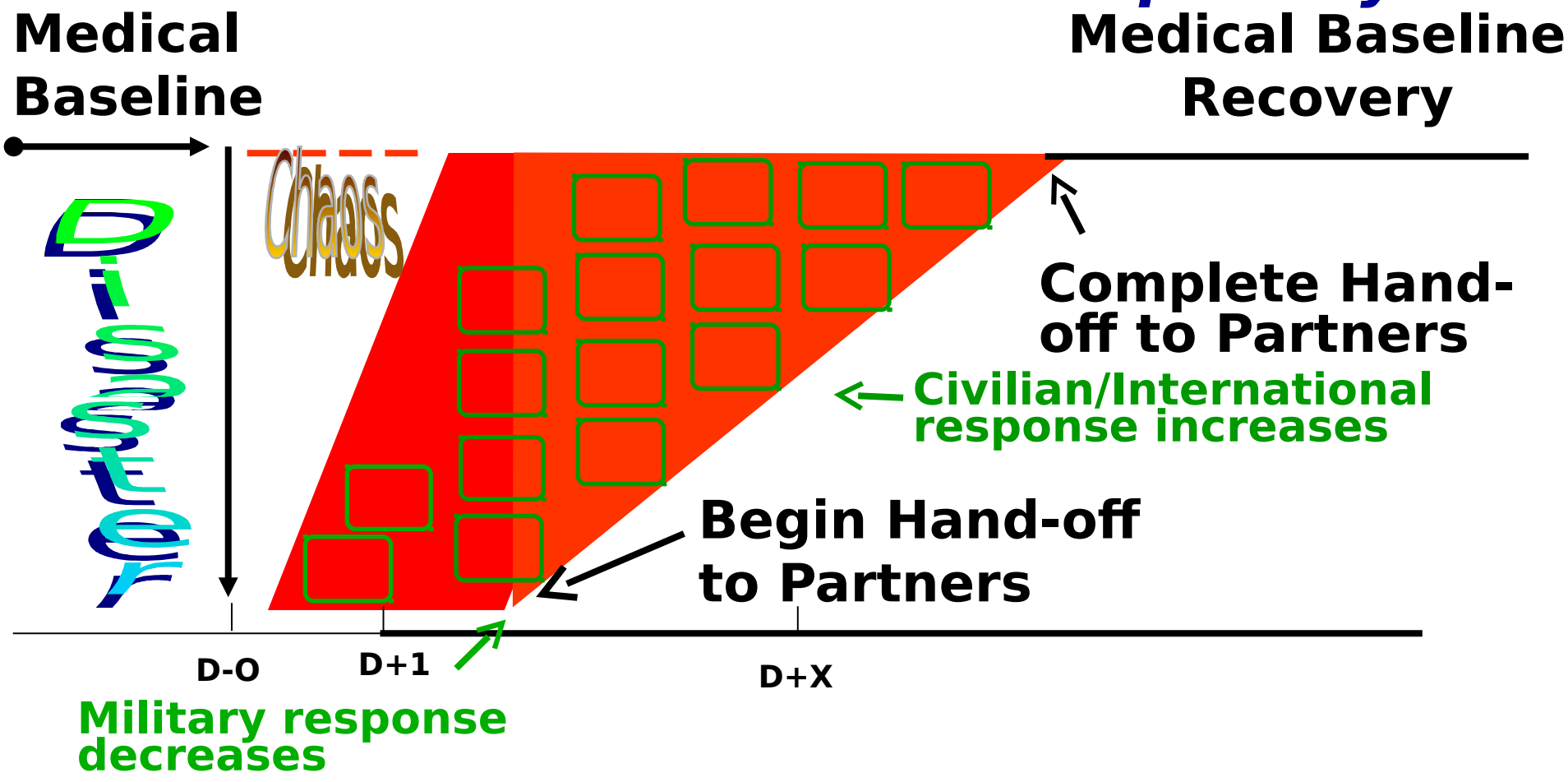
EMEDS Facilitates Hand-Off

EMEDS Modular Handoff Capability



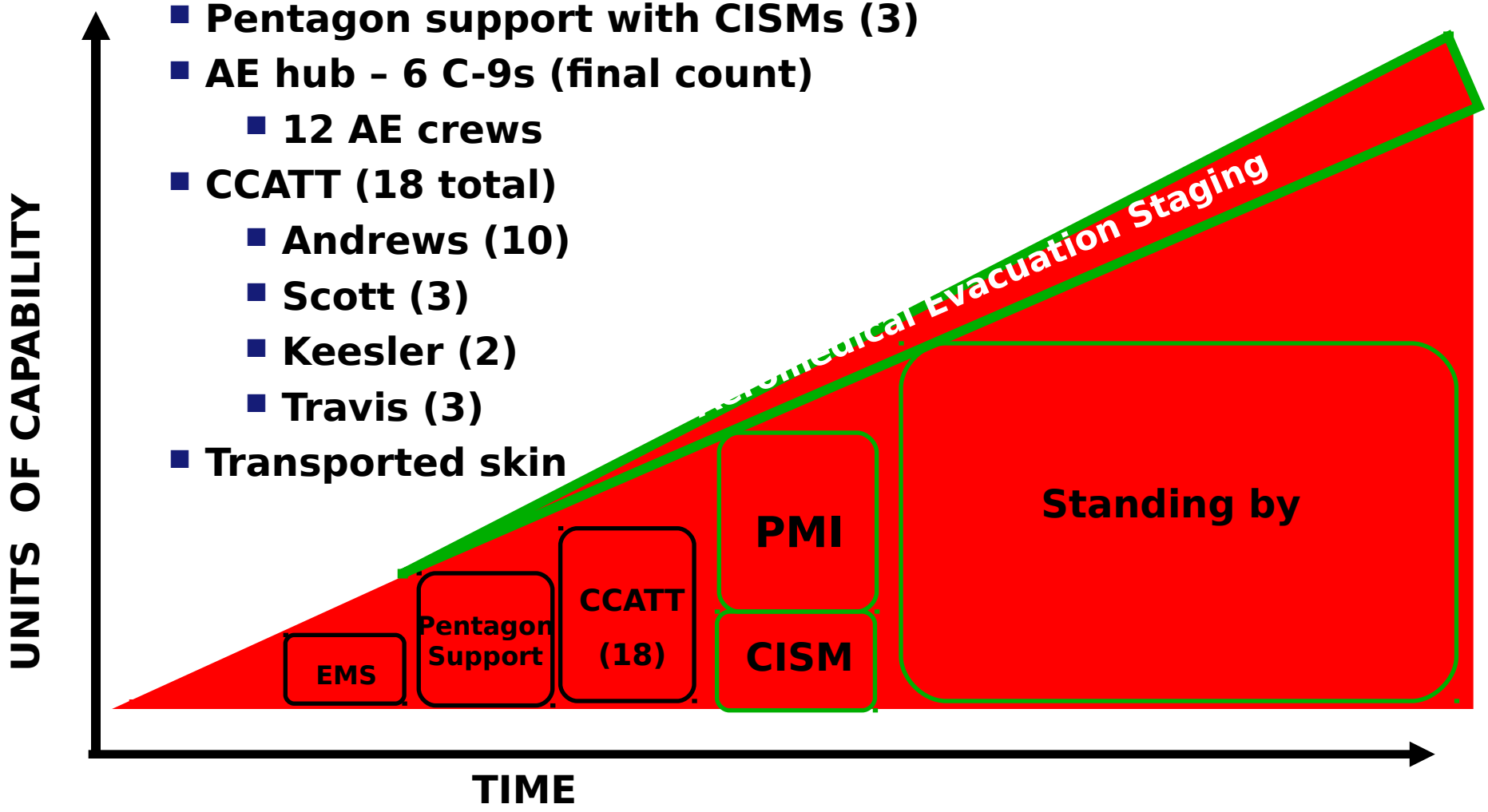
U.S. AIR FORCE

11 September 2001

The Red Wedge Concept

Andrews AFB Summary from 11 Sep 01

- Pentagon support with CISMs (3)
- AE hub – 6 C-9s (final count)
  - 12 AE crews
- CCATT (18 total)
  - Andrews (10)
  - Scott (3)
  - Keesler (2)
  - Travis (3)
- Transported skin

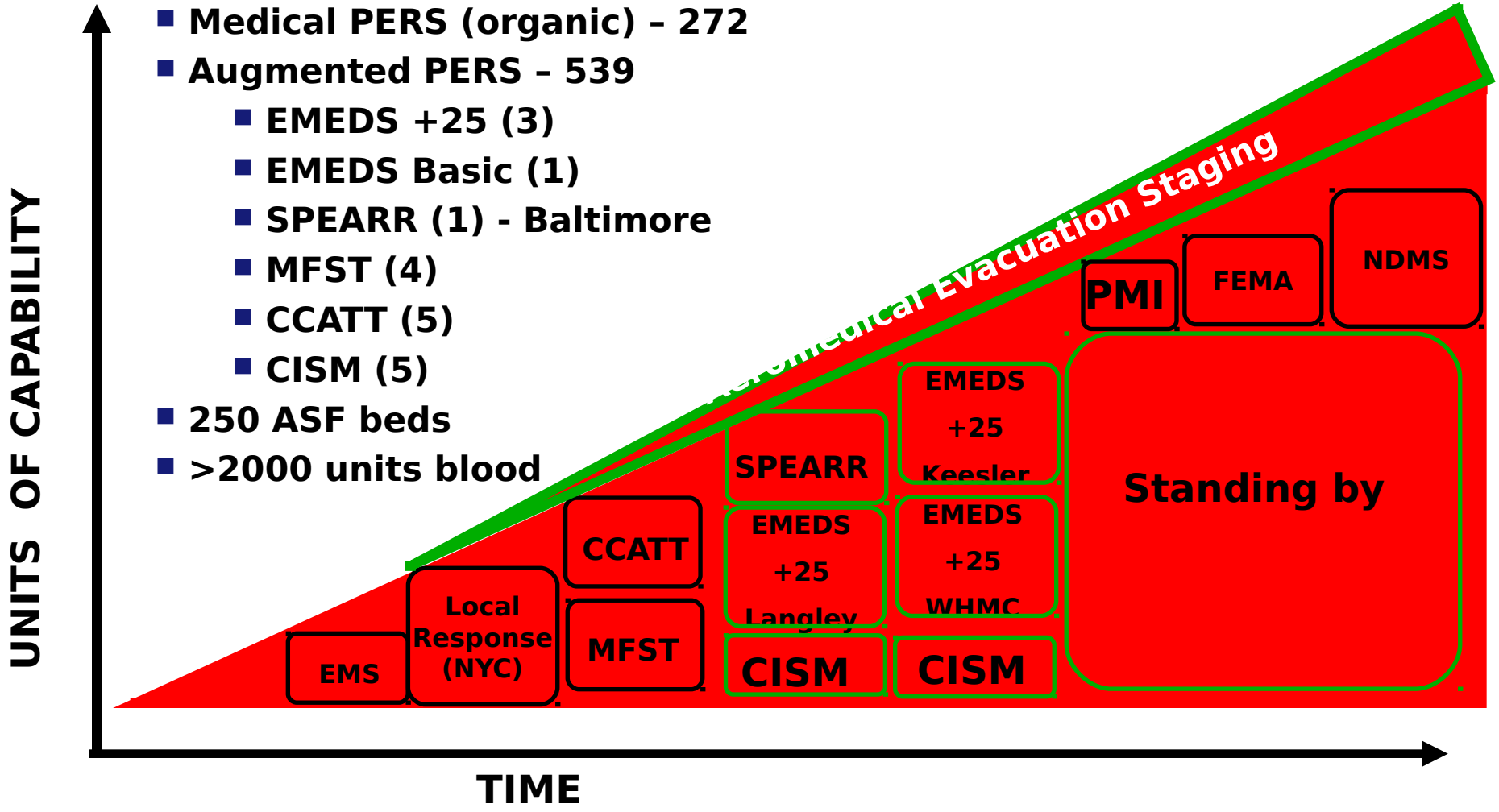


U.S. AIR FORCE

The Red Wedge Concept

McGuire AFB Summary from 11 Sep 01

- Medical PERS (organic) – 272
- Augmented PERS – 539
  - EMEDS +25 (3)
  - EMEDS Basic (1)
  - SPEARR (1) - Baltimore
  - MFST (4)
  - CCATT (5)
  - CISM (5)
- 250 ASF beds
- >2000 units blood



U.S. AIR FORCE

Predeployment Tips: "So You're on Mobility"

- **AEF cycle**
  - **Check equipment**
  - **Make sure all training completed**
  - **Know your team's CONOPS**
- **Personal affairs**
- **After action reports**
  - **https://afknowledge.langley.af.mil/aef/home/home.asp**
- **Learn from others' experience**
- **Required mob bag (primary, chem, winter, etc.)**
  - **Bug repellent**
  - **Sun screen**
  - **Anti-malarial medication**

U.S. AIR FORCE

Personal Bag(s) – What to Pack

1. Pictures of the family
2. Duct tape
3. Parachute Cord
4. A pocket knife (multi-purpose tool)
5. A light jacket
6. Any over-the-counter medications you regularly use
7. Pre-moistened towelettes
8. Toiletries
9. Music
10. Batteries

U.S. AIR FORCE

Personal Bag(s) – What to Pack

- **Civilian clothes (try to blend in)**
- **Travelers checks**
- **Flash light**
- **A good book (or two)**
- **Ear plugs**
- **Eye shades**
- **30-day supply of prescription meds**

U.S. AIR FORCE

During Deployment

- **Learn/know the mission**
- **Stay engaged**
- **Keep busy**
  - **Exercise program**
  - **Team sports**
  - **Personal hygiene (physical and mental)**
- **Get out and see what others in the AF do**
  - **Operations**
  - **Air Traffic Control**
  - **Maintenance**

U.S. AIR FORCE

Questions?

Lt Col Nancy Kersh

IMA to USAF Surgeon General
Chair to the Air University

nancy.kersh@maxwell.af.mil

DSN 493-6095

U.S. AIR FORCE

Information Sources

- Air Force Surgeon General Homepage
  - **https://www.afms.mil/sg/index.htm**
  - AFMS Functional Clinical Specialty Manager
- Air Force Personnel Center
  - **http://www.afpc.randolph.af.mil/**
  - Career Path Guide
  - Medical Officer Info (Assignments, Promotions, etc)
  - Special selection boards (GME, AFIT, special assignments)
- Air Reserve Personnel Center
  - **http://arpc.afrc.af.mil**
  - Info on ARC promotions
  - SG Directorate **1-800-525-0102, ext 7-1232/3/4 : DSN 926-7158**
  - Assignment info for IMAs
- Air National Guard
  - **http://www.ang.af.mil/sg**

U.S. AIR FORCE

Deployment...

REMEMBER, PEOPLE, WHEN YOU'RE IN A HOSTILE ENVIRONMENT, THE GROUND IS YOUR BEST FRIEND!
Ent
1. P.
2. C
IF YOU TAKE NOTHING ELSE INTO THE FIELD, MAKE SURE YOU'RE CARRYING AN ENTRENCHING TOOL!
THE SHALLOWEST TRENCH — ANY DEPRESSION — GREATLY ENHANCES YOUR CHANCES OF SURVIVAL! YES, QUESTION IN THE BACK.
YEAH, WOULDN'T A HOTEL ROOM WORK JUST AS WELL?
YOU'RE Air Force I TAKE IT.

EMEDS: Anderson AFB, Guam

- **Supports 7th AEW**
- **Augments Anderson Clinic**
  - **Surgical capability**
  - **Emergency medicine**
  - **Critical/Intensive care**
- **Modular: move in 2 hrs**
- **Fits on a C-130**

SG Newswire May 2003

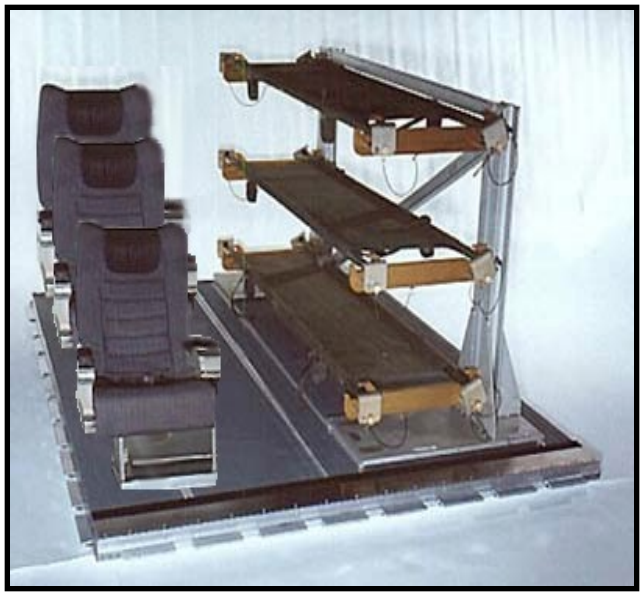
U.S. AIR FORCE

Mobility Bags

- **Required bags (primary, chem, winter, etc.)**
  - **Bug repellant**
  - **Sun screen**
  - **Anti-malarial medication**
- **Personal bag(s)**
  - **Civilian clothes (try to blend somewhat)**
  - **Travelers checks**
  - **Flash light**
  - **Multi purpose tool**
  - **Duct tape**
  - **A good book (or two)**
  - **Ear plugs and eye shades**

U.S. AIR FORCE

Aeromedical Evacuation Vision 2000



Critical Care Capable A/E System

Aeromedical Evacuation for the New Millennium

- **A/E required for EMEDS to be fully capable (limited beds)**
- **A/E deployable assets modularized for rapid deployability**